

REMARKS

The office action dated July 29, 2003 has been carefully reviewed and these remarks are responsive thereto. Reconsideration and allowance of the instant application are respectfully requested.

Claims 1-4, 8-9, 13-16 and 21-27, 29-34, 36-39 and 41-50 remain pending in this application. Claims 1, 8, 14-15, 25-26 and 34 have been amended. Support for these amendments can be found in the claims as originally filed and throughout the specification, including at page 6, page 9 and page 10. No new matter has been added.

Claim Rejections Under 35 U.S.C. §102

Claims 1-3 and 31 stand rejected for being anticipated by Hsu (U.S. Patent No. 5,865,870). Claims 1-3 and 31 as amended and new claims 44-45 are directed to a concentrated nitrogen and phosphorus fertilizer that includes an ammonium phosphite composition that has a nitrogen to phosphorous molar ratio of between about 1:1 to about 2:1, as well as nitrogen in a range of about 6 to 12 weight percent and phosphorus (as phosphite ion in solution) in a range of about 32 to 36 weight percent. Dependent claim 44 further recites that the nitrogen to phosphorous molar ratio is 1.4:1. Dependent claim 45 further recites that the composition includes ammonium polyphosphite.

Hsu relates to a fertilizer having both PO_4^- P and PO_3^- P to provide a synergistic effect of PO_4^- P and PO_3^- P on plant growth and uptake of phosphorus by plants. Hsu discloses that the weight ratio of PO_4^- P to PO_3^- P ranges from 1:20 to 20:1. Hsu discloses that ammonium phosphite is one of the salts of phosphorous acid that can be used as one component of a phosphorus fertilizer. Hsu further discloses that the salts of phosphoric acid and the salts of polyphosphoric acid include ammonium phosphate and ammonium polyphosphate, respectively. Hsu thus teaches only salts of phosphorous acid and phosphoric acid, which have a nitrogen to phosphorous molar ratio of 1:1. Only a single chemical equivalent of the salt form is possible according to the teachings of Hsu. Hsu does not teach or suggest a super equivalent molar ratio (e.g., greater than 1:1) of nitrogen to phosphorous. Moreover, Hsu does not teach or suggest a composition that includes ammonium polyphosphites.

Thus, Hsu does not teach each element of the claimed invention as required under 35 U.S.C. §102(b). Reconsideration and withdrawal of the rejection are respectfully requested.

Claim Rejections Under 35 U.S.C. §103

Claims 4, 8-16, 21-27, 29-30, 32, 34-39 and 41-43 stand rejected for being unpatentable over Hsu and Taylor (U.S. Patent No. 5,800,837). Claims 28, 33 and 40 stand rejected for being unpatentable over Hsu in view of Sheppardson and RU 2121990. Reconsideration and withdrawal of these rejections are respectfully requested because the cited documents, either alone or in combination, do not disclose, teach or suggest the invention claimed in claims 4, 8-16, 21-27, 29-30, 32-34, 36-39 and 41-43 or new claims 44-50.

The presently claimed invention is directed to a nitrogen and phosphorus fertilizer and to methods of making and using the same. The fertilizer includes a source of nitrogen in an amount of about 6-12 wt% and a source of phosphorus in an amount of about 22-36 wt%. The molar ratio of total nitrogen to total phosphorous in the fertilizer composition is between 1:1 to 2.4:1. The phosphorus comprises a phosphite composition where the molar ratio of nitrogen to phosphorous in the phosphite composition is between about 1:1 to about 2:1, preferably 1.4:1. In making the fertilizer, the temperature is maintained at below about 150°F, the pH is maintained at between about 5 to about 8 and anhydrous ammonia (ammonia also can be used) is mixed in the composition in order to obtain the super equivalent ratio of nitrogen to phosphorous in the ammonium phosphite composition.

As discussed above, Hsu does not disclose, teach or suggest a fertilizer that includes a molar ratio of nitrogen to phosphorous any greater than 1:1 in a phosphite composition. Furthermore, Hsu does not disclose, teach or suggest a molar ratio of total nitrogen to total phosphorous in the fertilizer composition any greater than 1:1. Therefore, although Hsu may teach that the combination of phosphorous acid with either phosphoric acid or polyphosphoric acid provides a synergistic effect, Hsu does not disclose, teach or suggest a nitrogen and phosphorus fertilizer having a super equivalent molar amount of nitrogen to phosphorus as claimed. One of skill in the art following the teaching of Hsu would not be motivated to modify the amount of nitrogen based on Hsu's teaching of the relative amounts of phosphite and phosphate. Moreover, Hsu does not teach or suggest a composition that includes ammonium

polyphosphites. Hsu also does not disclose, teach or suggest methods of preparing fertilizers that include *inter alia* maintaining the temperature below 150°F and mixing anhydrous ammonia as claimed. Accordingly, the present claims are not obvious in view of Hsu.

Taylor, Sheppardson et al., and RU 2121990 fail to provide any teachings for curing the deficiencies of Hsu. Taylor does not disclose, teach or suggest a fertilizer composition having the molar ratios of nitrogen to phosphorus as claimed or methods of making such compositions by *inter alia* controlling the temperature below 150°F and mixing anhydrous ammonia. Furthermore, the examples of Taylor are all directed to use for antifungal properties of fertilizers that comprise potassium salts without any nitrogen source. Thus, Taylor does not teach or suggest the presently claimed invention.

Sheppardson et al relates to an aqueous suspension fertilizer composition that includes a suspension agent to prevent undissolved solids in substantially homogeneous suspension. It does not disclose, teach or suggest the combination of nitrogen and phosphorus in the claimed molar ratios. Sheppardson et al. also do not disclose, teach or suggest use of ammonium polyphosphites. Furthermore, Sheppardson et al. do not recognize the significance of any particular amount of nitrogen in the fertilizer inasmuch as they disclose that “[t]he nitrogen source may comprise from 0% to a weight equal to or greater than that of the phosphorus-containing acid or salt in the suspension fertilizer composition.” (Page 3, para. 0054). Sheppardson et al. also do not teach or suggest methods of making fertilizer compositions by *inter alia* controlling the temperature below 150°F and mixing anhydrous ammonia. Thus, Sheppardson does not teach or suggest the claimed invention.

RU 2121990 teaches away from the claimed invention in that it discloses a significantly lower amount of phosphorus as P₂O₅ relative to the amount of nitrogen (N:P₂O₅ is 1:(0.04-0.7)), as well as preparation of the fertilizer at much higher temperatures (70-105°C or 158-221°F) than the claimed temperature of less than about 150°F. Thus, RU 2121990 does not teach or suggest the claimed invention.

Therefore, none of the cited references, whether taken alone or in combination, disclose, teach or even suggest the presently claimed invention, and the present claims are not obvious. Reconsideration and withdrawal of the rejection are respectfully requested.

Appln. No.: 09/898,424
Amendment dated January 29, 2004
Reply to Office Action of July 29, 2003

CONCLUSION

In view of the above amendments and remarks, prompt reconsideration and full allowance of the claims pending in the subject application are respectfully requested. All rejections having been addressed, applicant respectfully submits that the instant application is in condition for allowance, and respectfully solicits prompt notification of the same.

If any fees are required or if an overpayment is made, the Commissioner is authorized to debit or credit our Deposit Account No. 19-0733, accordingly.

Respectfully submitted,

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Dated: January 29, 2004

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Application of: Donald C. Young
Application No. 09/898,424
Filing Date: July 3, 2001
Title: Ammonium Phosphate/Phosphite Fertilizer Compound
Attorney Docket No. 05331.00002

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as agents with full power of substitution and revocation to prosecute this application and to transact all business in the United States Patent & Trademark Office connected therewith, throughout the world with respect thereto for all corresponding applications, and to represent the undersigned before all the competent International Authorities in connection with all corresponding international application filed by the undersigned, and to make or receive payment on behalf of the undersigned.

Date: Oct 1, 2003

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